Inspection Procedure **GDF-01**

Gasoline Dispensing Facilities

BAG TEST FOR MULTI-NOZZLE VACUUM ASSIST SYSTEMS

1. PURPOSE

1.1 This inspection procedure provides a method to determine if "bootless" vacuum assist vapor recovery nozzles allow air ingestion into the vapor recovery system which degrades its performance during vehicle refueling. The procedure can also isolate the source of air leakage. It can be used on dispensers that have three nozzles on each side with built-in integral check valves.

2. PRINCIPLE

2.1 A plastic bag is placed over the nozzle and sealed around the hose at the base of the nozzle. The bag is observed while another nozzle on the same side of the dispenser dispenses at least 2.5 gallons of fuel into a vehicle. If the bag shows a definite collapsing during the dispensing event, there is a leak in the bagged nozzle causing ingestion of air into the vapor recovery system. Ingestion of air will reduce nozzle vapor recovery effectiveness and increase gasoline evaporation in the system.

3. INTERFERENCES

3.1 If the vapor recovery vacuum pump is not operational, this procedure will not detect a leaking nozzle.

3.2 If the vapor passage of the hose has a column of gasoline larger than the vacuum capabilities of the vacuum pump, a leaking nozzle may not be detected.

3.3 Some models of dispensers cannot set the price-per-gallon if more than one nozzle is removed from the dispenser holster. Wait until the price has been set before removing the nozzle to be tested.

3.4 The nozzle being tested and the nozzle dispensing fuel must be connected to the same common vapor piping and vacuum pump.

3.5 This procedure cannot be used on single nozzle dispensers or passive systems such as a balance system.

3.6 Any holes in the bag will bias the test procedure to indicate compliance.

4. EQUIPMENT

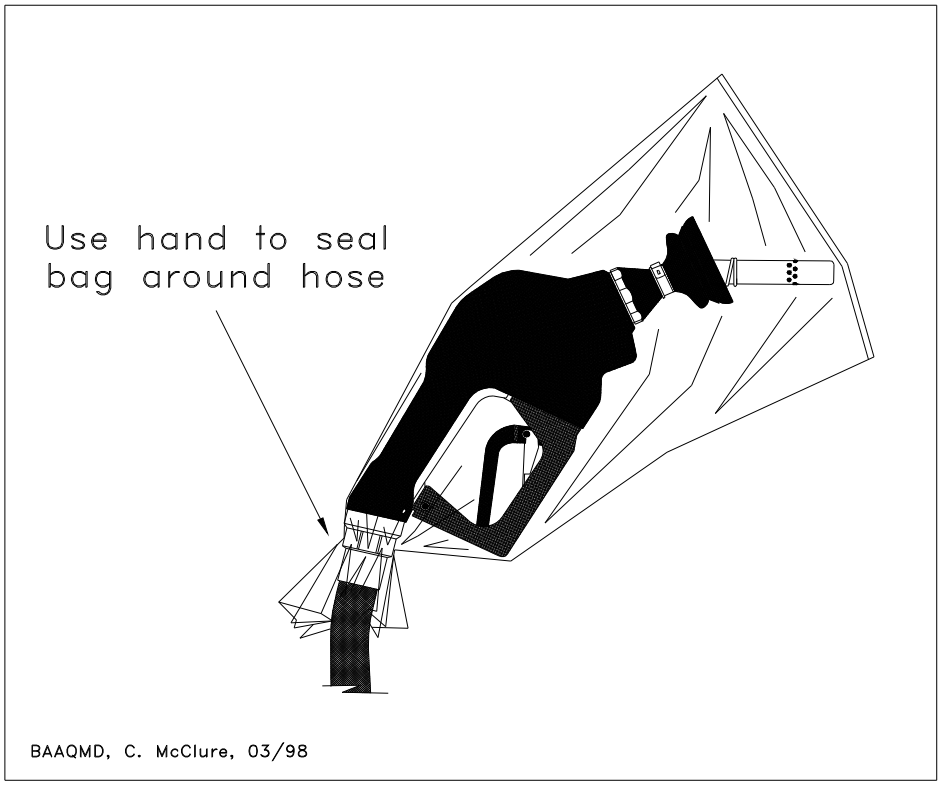
4.1 **Bag**. Use a polyethylene plastic bag large enough to enclose the entire vapor recovery nozzle. Recommended sizes for a polyethylene bag are 10 to 12 inches in width and 18 to 20 inches in length. The bag should be at least 1.5 mils thick, but not greater than 4 mils thick. Bags that are too thin will tend to break while bags that are too thick may tend to mask a leak in the nozzle.

4.2 **Data Sheet**. Use a data sheet to keep track of which nozzles have been tested. This data sheet will help ensure and verify that all nozzles have been checked on a routine basis. An example of a data sheet is shown in Figure 3.

5. INSPECTION PROCEDURE

5.1 Visually inspect the polyethylene plastic test bag to verify it has no holes. After product flow from one of the nozzles into a vehicle has been initiated, pick up one of two nozzles not being used and carefully place the entire nozzle into the plastic bag. Avoid tipping the nozzle spout downward, which may cause spillage of gasoline. Once again, visually inspect the test bag to ensure no holes were caused by inserting the nozzle. Ensure that some air is in the bag and use your hand to provide a tight seal between the bag and the nozzle/hose connection. See Figure 1. Watch the bag for signs of collapse. If the bag does not show a definite collapse due to air being removed after 2.5 gallons, remove the nozzle from the bag, hang it back up on the dispenser, and check the other idle nozzle.

FIGURE 1
Bag and Nozzle

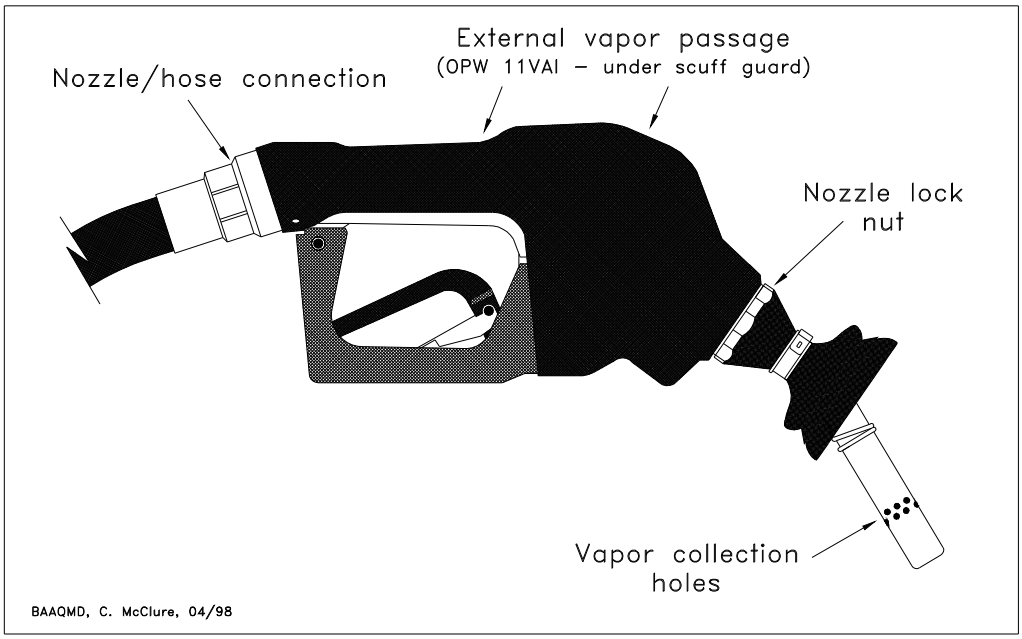


5.2 If the bag collapses, it verifies that there is air leaking into the nozzle. The following additional tests may be done to determine where the leak is occurring:

5.2.1 Use your hand to seal the bag on the nozzle body just below the nozzle lock nut. Make sure some air is in the bag to start. If no collapse of the bag is observed, the leak is probably through the nozzle vapor passage. If the bag does collapse, use your hand to seal the bag just below the spout's vapor collection

holes. Again make sure that some air is in the bag. If the bag collapses when sealed below the vapor collection holes, the leak is probably at the nozzle's vapor check valve. If the bag fails to collapse after being sealed just below the spout vapor collection holes, the leak was probably at the nozzle lock nut. See Figure 2 for illustration of nozzle components.

FIGURE 2
Typical Nozzle Components



5.3 Record the presence or absence of leaks on the data sheet. Retain this data sheet as a record of which nozzles have been tested for leaks, corrective actions taken and re-tests performed.

5.4 Replace the nozzle component that caused the leak or, If the leak was caused by the nozzle vapor check valve, replace the nozzle. After replacing defective components or the nozzle, retest the new or repaired nozzle as outlined in this procedure.

5.5 To check all three nozzles on the side of a dispenser will require at least two vehicles refueling with different product grades.

6. RECORDING DATA

6.1 Results of the bag test should be tabulated on a data sheet to provide a record of nozzles checked and a reminder to take corrective action to fix leaks found.

6.2 Routine bag testing will help minimize the emissions of gasoline vapors and reduce evaporation of liquid gasoline.

This Inspection Procedure developed by the Source Test Section of the
Bay Area Air Quality Management District

FIGURE 3
BAG TEST DATA SHEET-INSPECTION PROCEDURE GDF-01

STATION NAME _____ **ADDRESS** _____

CITY _____ **PHONE** _____

DISPENSER MODEL # _____ **NUMBER OF NOZZLES** _____

PUMP #	GAS GRADE	NOZZLE BRAND	NOZZLE SERIAL #	NOZZLE LEAKS [Y/N]	LOCATION OF LEAK	CORRECTIVE ACTION	DATE REPAIRED
1	87						
1	89						
1	92						
2	87						
2	89						
2	92						
3	87						
3	89						
3	92						
4	87						
4	89						
4	92						
5	87						
5	89						
5	92						
6	87						
6	89						
6	92						
7	87						
7	89						
7	92						
8	87						
8	89						
8	92						
9	87						
9	89						
9	92						
10	87						
10	89						
10	92						

TEST CONDUCTED BY _____ DATE _____